

valleys of the Uspallata range of mountains toward Mendoza] (Ed--isotype, K--type, K--isotype, Lu--isotype, N--isotype, N--photo of type, Z--photo of type), s.n. [near San Isidro, Nov. 13, 1824] (K), s.n. [Mendoza, 1825] (G, K), s.n. [Baths of Villa Vicencio] (G); Herb. Ledebour s.n. [Mendoza] (L); Jürgensen 185 (Cp, Cp); D. O. King 141 (Bm); Mexia 4390 (Ca--560639, G, N--photo, Z--photo); Nicora 4347 (N); Perez Moreau s.n. [Herb. Mus. Argent. Cienc. Nat. 12705] (N); R. A. Philippi s.n. [Andes Mendocinae] (B, B, B, Cb, N, P, V), s.n. [Cordillera de Mendoza] (V); Rimbach 18 (L); Ruiz Leal 1044 (N), 4372 (N), 4794 (N); Sanzin 226 [Herb. Osten 12822] (Ug); Semper 245 (S), s.n. [Ruiz Leal 4135] (N), s.n. [Ruiz Leal 4224] (N), s.n. [Ruiz Leal 10220] (N); Sparre 1496 (S); Spegazzini 11878 (Ca--882457); E. Wall 5, in part (Ew, Ew). San Juan: Saile Echegaray s.n. [Leoncito, I. 1876] (B).

MATERIALS TOWARD A MONOGRAPH OF THE GENUS ACANTHOLIPPIA

Harold N. Moldenke

This is the twenty-seventh in my series of works of monographic nature on the genera of Verbenaceae, Avicenniaceae, Stilbaceae, and Symphoremaceae. Previous genera so treated were Aegiphila Jacq., Amasonia L. f., Avicennia L., Baillonia Bocq., Bouchea Cham., Casselia Nees & Mart., Castelia Cav., Chascanum E. Mey., Citharexylum B. Juss., Cornutia Plum., Diostea Miers, Dipyrena Hook., Hierobotana Briq., Parodianthus Troncoso, Petitia Jacq., Petrea Houst., Priva Adans., Pseudocarpidium Millsp., Recordia Moldenke, Rehdera Moldenke, Rhaphithamnus Miers, Stylodon Raf., Svensonia Moldenke, Tectona L. f., Vitex Tourn., and the New World and cultivated members of Callicarpa L.

Full explanation of the abbreviations employed herein for the names of the 255 herbaria whose material was examined, in whole or in part, in the preparation of these works will be found in Phytologia 5: 154--159 (1955), 6: 242 (1958), and 7: 91--92 (1959), 123--124 & 293 (1960).

ACANTHOLIPPIA Griseb., Abh. K. Gesell. Wiss. Götting. 19: 244 [Pl. Lorentz. 196]. 1874.

Literature: C. Gay, Hist. Fis. Chile Bot. 5: 29--30. 1849; R. A. Phil., Fl. Atac. 40. 1860; A. Gray, Proc. Am. Acad. 6: 49--50. 1862; R. A. Phil., Anal. Univ. Chile 27: 350. 1865; R. A. Phil., Anal. Univ. Chile 36: 192--193 [Sert. Mendoc. Alt. 34]. 1870; Griseb., Abh. K. Gesell. Wiss. Götting. 19: 244--245 [Pl. Lorentz. 196--197]. 1874; Benth. in Benth. & Hook., Gen. Pl. 2: 1143. 1876; Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb.

Fl. Argent.] 279. 1879; Hieron., Bol. Acad. Nat. Córdoba 4: 407. 1881; Ball, Journ. Linn. Soc. Lond. Bot. 21: 230. 1884; Lorentz & Niederlein, Exped. Rio Negro 266. 1889; Jacks., Ind. Kew. 1: 18 (1893), 2: 96--96 (1894), and 2: 1178. 1895; R. A. Phil., Anal. Univ. Chile 90: 620 & 622. 1896; Eriq., Ann. Conserv. & Jard. Bot. Génév. 4: 21. 1900; Dusén, Patagonien 252. 1900; R. E. Fries, Nov. Act. Reg. Soc. Sci. Upsal., ser. 4, 1: 110. 1905; Macloskie in W. B. Scott, Rep. Princeton Univ. Exped. Patagonia 8 (2): 691-692. 1905; Hauman-Merck, Anal. Mus. Nac. Nat. Hist. Buenos Aires 24: 415. 1913; Sanzin, Anal. Soc. Cient. Argent. 88: 101. 1919; Molfino, Physis 5: 21. 1921; Doming., Mat. Med. 117. 1928; I. M. Johnston, Physis 9: 317. 1929; Wehmer, Die Pflanzenstoffe 1022. 1931; Houard, Zoocéd. Pl. Amer. Sud 349--350. 1933; Latzina, Trab. Inst. Bot. & Farm. Buenos Aires 54: 112. 1935; Latzina, Lilloa 1: 189. 1937; Moldenke, Lilloa 5: 370--372. 1940; Moldenke, Prelim. Alph. List Invalid Names 30 & 48. 1940; Moldenke, Suppl. List Invalid Names 1, 5, 6, & 10--12. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 42, & 84. 1942; Moldenke, Alph. List Invalid Names 1, 30--32, & 50. 1942; Moldenke, Lilloa 8: 411--412. 1942; Moldenke, Phytologia 2: 90. 1944; Moldenke, Lilloa 10: 336--337 & 365--366. 1944; Covas & Schnack, Darwiniana 7: 86. 1945; Moldenke, Alph. List Cit. 1: 73, 77, 82, 84, 87, 93, 95, 96, 163, 200, 202, 230, & 233. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 14 & 15. 1947; Cabrera, Anal. Acad. Nac. Cienc. Nat. Buenos Aires 12: 21--22 & 38, fig. 3. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 30, 43, & 44. 1948; Moldenke, Alph. List Cit. 2: 377--379, 381, 384, 440, 442, 443, 537, 575, 599, 620, & 626--629 (1948), 3: 672, 673, 693, 733, 735, 748, 749, 775, 804, 813, 880, 896, 910, & 916 (1949), and 4: 1017, 1032, 1090--1092, 1095, 1116, 1178, 1191, 1203, 1214, 1249, 1251, 1293, & 1302. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 100, 102, & 174. 1949; Moldenke, Phytologia 3: 106--107. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 2. 1949; Acevedo de Vargas, Bol. Mus. Nac. Hist. Nat. [Santiago, Chile] 25: 38. 1951; J. H. Hunziker, Revist. Invest. Agric. 6 (2): 192. 1952; Biol. Abstr. 28: 904. 1954; Moldenke, Résumé 112, 120, 122, 227, 233, 312--314, 316, 317, 373, 406, & 440. 1959.

Intricately much-branched xerophilous shrubs, usually small and depressed or even prostrate, often aromatic; stems and branches tough, white or yellow, often longitudinally many-ridged, glabrous or puberulent, often covered with corky bark; twigs numerous, short, stiff, divaricate, often spine-tipped, densely puberulent or glabrescent; principal internodes much abbreviated, the twigs often only 5--15 mm. apart, but the leaves borne more or less irregularly on the branches between the twigs, the leaves on the twigs mostly adjacent or practically so; leaves mostly opposite, but often alternate or scattered, minute, often much reduced and scale-like, fleshy, sessile and closely adnate to the twigs, branchlets, branches, and even scattered on the main stems, or bearing fascicles of additional leaves in their axils, 1--6 mm. long, mostly 3-lobed or 3-parted,

the central lobe usually longer than the lateral ones, with much thickened and more or less revolute margins, often deeply 2- or 3-canaliculate beneath, glabrous or pilose-puberulent, sometimes ciliolate, no expanded non-appressed leaves produced even during and after anthesis, the lobes or lobules acute or obtuse, short; inflorescence terminal or both axillary and terminal, often much abbreviated and capitate, dense and congested when young, mostly less than 1 cm. long and wide, few-flowered, sometimes finally becoming cylindrical and then to 1.6 cm. long; bractlets rather large, imbricate, broadly elliptic or ovate-deltoid, the lowest often merging into the uppermost leaves, often somewhat navicular, sometimes short-acuminate at the apex and carinate on the back, densely white-villous on the back, varying from longer than to equaling or shorter than the calyx; rachis densely villosulous; calyx membranous, gamosepalous, inferior, tubular, 2--4 mm. long, not winged, densely pilose, villous, or white-hispid, its rim 4-crenate or 4-dentate, the teeth mostly short, distinct, and acute, with broad membranous sinuses; corolla gamopetalous, infundibular, mostly white, with a yellow throat, its tube equaling or slightly surpassing the calyx, narrow-cylindric, the limb spreading, 2-lipped, unequally or subequally 4- or 5-lobed, usually about 1/3 as long as the tube, the lobes subrotund; stamens didynamous, included or short-exserted, the upper (posterior) ones often terminating in a small capitate appendage which is a prolongation of the connective; anthers 2-celled; ovary 2-celled, the cells 1-ovulate; ovules erect; style single, terminal, filiform; stigmas capitate; fruit 2-coccos, dry, the nutlets concavo-plane on the ventral surface, easily separating, rounded on the dorsal surface; seeds with copious endosperm; embryo axile; endosperm fleshy; radicle inferior.

The genus is closely related to Lippia Houst., but differs in its singular xerophilous habit and its copious endosperm. Grisebach notes that endosperm is known in the Verbenaceae only in this genus and in Neosparton Griseb. Five species are known in the genus, all native to desert and semi-desert areas in Chile, Argentina, and Bolivia. The type species of the genus is A. hastulata Griseb.

In all, 171 herbarium specimens and 15 mounted photographs have been examined. An artificial key to the species follows:

1. Leaves with several pairs of lobules at the base. A. hastulata.
- 1a. Leaves with only a single pair of lobules at the base.
 2. Leaves much reduced and scale-like, all closely adnate to the branches.....A. riojana.
 - 2a. Leaves larger, at least the mature ones spreading.
 3. Leaves ovate in outline, truncate at base. A. deserticola.
 - 3a. Leaves obovate or elliptic in outline, cuneate at base.
 4. Leaves usually plainly obovate, the lobes very short, the sinuses extending to about one-third the length of the blade; Argentina.....A. seriphoides.
 - 4a. Leaves usually elliptic in outline, the lobes elongated

and the sinuses extending to the middle or occasionally to the base of the blade; Chile.....A. trifida.

ACANTHOLIPPIA DESERTICOLA (R. A. Phil.) Moldenke, Lilloa 5: 370. 1940.

Synonymy: Verbena (Shuttleworthia) deserticola R. A. Phil, Fl. Atac. 40. 1860. Lippia deserticola R. A. Phil., Anal. Univ. Chile 27: 350. 1865. Lippia microphylla R. A. Phil., Anal. Univ. Chile 27: 350. 1865 [not L. microphylla Benth., 1894, nor Cham., 1832]. Acantholippia salsoloides Griseb., Abh. K. Gesell. Wiss. Götting. 19: 244--245 [Pl. Lorentz. 196--197]. 1874. Lippia trifida R. A. Phil., Fl. Atac. 40. 1860 [not L. trifida C. Gay, 1849, nor Clos, 1896, nor Remy, 1940]. Lippia salsoloides Benth. in Benth. & Hook. f., Gen. Pl. 2: 1143. 1876. Lippia salsoloides Benth. & Hook. f. ex Jacks., Ind. Kew. 2: 95. 1894. Lippia salsoloides Briq. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941. Lippia salsoloides (Griseb.) Benth. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941. Lippia salsoloides (Griseb.) Benth. & Hook. ex Moldenke, Lilloa 10: 365, in syn. 1944. Lippia salsoloides (Griseb.) Briq. ex Moldenke, Résumé 316, in syn. 1959.

Literature: R. A. Phil., Anal. Univ. Chile 27: 350. 1865; Griseb., Abh. K. Gesell. Wiss. Götting. 19: 244--245 [Pl. Lorentz. 196--197]. 1874; Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb. Fl. Argent.] 279. 1879; Jacks., Ind. Kew. 1: 18 (1893) and 2: 95. 1894; R. A. Phil., Anal. Univ. Chile 90: 622. 1896; I. M. Johnston, Physis 9: 317. 1929; Moldenke, Lilloa 5: 370. 1940; Moldenke, Suppl. List Invalid Names 1, 5, & 6. 1941; Moldenke, Alph. List Invalid Names 1 & 30--32. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 42, & 84. 1942; Moldenke, Lilloa 8: 411--412 (1942) and 10: 336--337 & 365. 1944; Moldenke, Phytologia 2: 90. 1944; Moldenke, Alph. List Cit. 1: 95 & 233. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 15. 1947; Moldenke, Alph. List Cit. 2: 377, 378, 440, 442, 537, 599, & 628 (1948), 3: 672, 733, 735, 804, 813, & 916 (1949), and 4: 1032, 1092, 1116, 1191, 1203, 1293, & 1302. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 100, 102, & 174. 1949; J. H. Hunziker, Revist. Invest. Agric. 6 (2): 192. 1952; Moldenke, Résumé 112, 120, 122, 227, 312, 314, 316, 317, & 440. 1959.

An intricately branched shrub, to 1 m. tall, very fragrant; branches short, thick, pulverulent-tomentose, often spinescent, the pubescence whitish; leaves very small, about 2 mm. long, rather thick-textured, canescent, trifid, the segments ovate, sulcate-canaliculate beneath, the central one longest; spikes rather short; calyx elongate, hispid-lanate with long hairs, the teeth subspinescent, the hairs rather long; corolla white or pale-blue.

Hueck says that this is a characteristic plant of the shrubby steppe. It is said by Philippi to be frequent in the northwestern part of the Atacama Desert. I found it myself as a common very spiny shrub 1 to 3 feet tall on the puna at San Antonio de

los Cobres, at an altitude of 15,662 feet, on October 21, 1948. It has been collected also on dry campos, at altitudes of 3300 to 4500 meters, in flower from January to April and September to November. A popular vernacular name for it is "rica-rica". It is said by Hunziker to be medicinal.

The species is very similar to and closely related to A. trifida (C. Gay) Moldenke. Both are very fragrant and pulverulent-tomentose, with trifid leaves and hispid-lanate calyxes. However, in A. trifida the branches are much longer and thinner, the hairs are yellowish, the leaves are 5 mm. long, the calyx-hairs are mostly short, and the calyx-teeth are not spinescent, while in A. deserticola the branches are short and thick, the hairs are whitish, the leaves are only 2 mm. long, the calyx-hairs are much longer, and the calyx-teeth are subsperescent.

The type collection of A. salsoloides is Lorentz 457 from Laguna Blanca, at an altitude of 10,000 feet. Specimens of the species have been misidentified and distributed in herbaria as A. hastulata Griseb., Lippia sp., and L. hastulata (Griseb.) Hieron.

In several of my previous publications I regarded the binomials, Lippia riojana Hieron. and L. riorjana Hieron., as synonyms of A. deserticola, and cited Hieronymus & Niederlein 547 and s.n. [Vinchina, 5.III.1879], and T. Meyer 4045, all from La Rioja, Argentina. These names and collections are, however, now regarded by me as representing a distinct species, A. riojana Hieron. & Moldenke.

In all, 36 herbarium specimens and 4 photographs, including the type collections or phototypes of all the names involved, have been examined.

Citations: BOLIVIA: Potosí: Asplund 3037 (S, Us), 3168 (S, Us). Province undetermined: Kuntze s.n. [Condri] (N). CHILE: Antofagasta: Pfister 9366 (S); V. Schwartz s.n. [pr. Ascoku o Cebollar, Dec. 1916] (Go); Werdermann 1024 (Ca—314693, Gg—147434, N, S). Atacama: R. A. Philippi s.n. [Macbride photos 17501] (Kr—photo of isotype, N—photo of isotype). ARGENTINA: Catamarca: Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 30/601] (N); Jørgensen 1736 [Herb. Inst. Miguel Lillo 32373; Herb. Osten 11010; Herb. Mus. Argent. Cienc. Nat. 23980] (N, N, N, Ug); Lorentz 457 [Macbride photos 17540] (Kr—photo, N—photo); Peirano s.n. [Herb. Inst. Miguel Lillo 32832] (N). Jujuy: Claren 11577 (S); R. E. Fries 746 [10.11.1901] (S), 746 [18.11.1901] (N, S); Scolnik 147 (W—2045557); Venturi 10129 (N, S). Salta: Budin s.n. [Herb. Mus. Argent. Cienc. Nat. 30/1037] (N); Gerling s.n. [XII.1897] (N); Hueck 276 (N); Krapovickas 3126 (N); T. Meyer 3445 [Herb. Inst. Miguel Lillo 35568] (En, N); Moldenke & Moldenke 19745 (Es, Lg, N, N, Sm).

ACANTHOLIPPIA HASTULATA Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb. Fl. Argent.] 279. 1879.

Synonymy: Lippia hastulata (Griseb.) Hieron., Bol. Acad. Nat. Córdoba 4: 407. 1881. Lippia hastatula Hieron. ex Moldenke, Suppl. List Invalid Names 5, in syn. 1941. Lippia hastatula (Griseb.) Hieron. ex Moldenke, Suppl. List Invalid Names 5, in syn. 1941. Acantholippia hastatula Griseb. ex Moldenke, Lilloa 10: 365, in syn. 1944. Lippia hastulata Griseb. ex Moldenke, Résumé 313, in syn. 1959.

Literature: Griseb., Abh. K. Gesell. Wiss. Götting. 19: 244 (1874) and 24: [Symb. Fl. Argent.] 279. 1879; Hieron., Bol. Acad. Nat. Córdoba 4: 407. 1881; R. E. Fries, Nov. Act. Reg. Soc. Sci. Upsal., ser. 4, 1: 110. 1905; Doming., Mat. Med. 117. 1928; Wehmer, Die Pflanzenstoffe 1022. 1931; Latzina, Trab. Inst. Bot. & Farm. Buenos Aires 54: 112. 1935; Latzina, Lilloa 1: 189. 1937; Moldenke, Lilloa 5: 370. 1940; Moldenke, Suppl. List Invalid Names 5. 1941; Moldenke, Lilloa 8: 412. 1942; Moldenke, Alph. List Invalid Names 31. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 42 & 84. 1942; Moldenke, Phytologia 2: 90. 1944; Moldenke, Lilloa 10: 337 & 365--366. 1944; Moldenke, Alph. List Cit. 1: 77 & 95. 1946; Cabrera, Anal. Acad. Nat. Cienc. Buenos Aires 12: 21--22, fig. 3, & 38. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 1. 1947; Moldenke, Alph. List Cit. 2: 377, 379, 381, 384, 442, 575, & 620 (1948), 3: 673 & 910 (1949), and 4: 1090--1092. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 102, & 174. 1949; Moldenke, Résumé 112, 122, 227, 313, & 440. 1959.

Illustrations: Cabrera, Anal. Acad. Nat. Cienc. Buenos Aires 12: 21, fig. 3. 1947.

Shrub, to 2.5 m. tall, aromatic; branches approximate, slender, spreading, rigid, densely leafy, 8--12.5 cm. long, eventually leafless, spinescent at the apex; branchlets villosulous; leaves alternate, sessile, rather thick, about 4 mm. long, deltoid-acute, lobulate at the base, broad, subglabrous, ciliolate, incrassate and revolute along the margins, the basal lobules contiguously 2- or 3-paired, subrotund, the leaf-blades entire beyond the lobules, canaliculate between the margins and the thickened midrib; midrib prominent beneath, connected to the margins below the apex; inflorescence capitate, the heads terminal on the branchlets, at first ovoid and 6--8 mm. long, finally becoming cylindrical and 12--16 mm. long; bractlets deltoid, the lowest ones merging into the upper leaves, equaling the calyx; calyx about 4 mm. long, white-pilose, 4-dentate, the teeth short, distinct, acute, with broad membranous sinuses; corolla white, its tube equaling the calyx, the limb 2-lipped, about 1/3 as long as the tube, the lobes 5, subequal, subrotund; embryo axile; endosperm copious.

The type of this species, which is also the type of the genus, was collected by Paul Günther Lorentz and Georg Hans Emmo Wolfgang Hieronymus (no. 713) at San José de Tilcara, Maimara, Jujuy, Argentina. The binomial is erroneously cited to Abh. K. Gesell. Wiss. Götting. 19: 244 (1874) by me in Lilloa 5: 370 (1940). The species inhabits mountain slopes, hillsides, quebradas, and arid dry washes, at altitudes of 2800 to 3600 meters, and has been

collected in anthesis from December to March. A popular name for it is "rica-rica". Hunziker says that it is a "common shrub very abundant on the banks of the Río Grande, used very extensively as a medicinal plant, an infusion being made for stomach-ache." Castillón calls it "medicinal", Hauman reports its being used in the form of an infusion as a stomachic, and Schulz also records it as a stomachic. West reports that it is used as a flavoring in maté. Wehmer, in the reference cited above, says that it contains an ethereal oil resembling some types of menthol, containing terpenen $C_{10}H_{14}$, phenolen, fat, wax, rosin, sugar, and organic acids in strength. He reports that it has properties resembling phytosterin and glykoside, consisting of 4.3 percent water, 13.75 percent ash, and 60 percent SiO_2 and other acids.

The T. Meyer 3445 cited by me in Lilloa 8: 412 (1942), as well as the Jürgensen 1736 and Budin s.n. cited in Lilloa 5: 370 (1940), as this species, actually all have proved to be A. deserticola (R. A. Phil.) Moldenke instead. Grisebach says it is similar to A. deserticola, but is "destitute of elongate wool" and differing in the calyx-teeth and corolla.

In all, 16 herbarium specimens and 2 mounted photographs, including the type collections or phototypes of all the names involved, have been examined.

Citations: BOLIVIA: Potosí: Fiebrig 3200 [Herb. Osten 15225] (N, Ug). ARGENTINA: Jujuy: Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 23900] (N); Castillón 6607 [Herb. Inst. Miguel Lillo 32370] (Ca--8628); Hauman s.n. [La Quiaca, II.1916] (Br); Hunziker 1334 (N); Lorentz & Hieronymus 713 [Macbride photos 17511] (Kr--photo of type, N--isotype, N--photo of type); Schreiter 11126 [Herb. Inst. Miguel Lillo 34420] (N); A. G. Schulz 8762 (Sz); Venturi 4885 (Ca--376048, Gg--157719), 8114 (Ca--397728), 8300 (Ca--397687, Gg--173478), s.n. [Humahuaca, Feb. 28, 1929; Herb. Inst. Miguel Lillo 37999] (N); J. West 6301 (Ca--578733).

ACANTHOLIPPIA RIOJANA Hieron. & Moldenke ex Moldenke, Phytologia 3: 106--107. 1949.

Synonymy: Acantholippia riojana Hieron. ex Moldenke, Suppl. List Invalid Names 1, in syn. 1941. Lippia riojana Hieron. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941. Lippia riorjana Hieron. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941.

Literature: Moldenke, Lilloa 5: 370. 1940; Moldenke, Suppl. List Invalid Names 1 & 6. 1941; Moldenke, Alph. List Invalid Names 1 & 32. 1942; Moldenke, Lilloa 8: 411--412 (1942) and 10: 365. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 102 & 174. 1949; Moldenke, Phytologia 3: 106--107. 1949; Moldenke, Résumé 122, 227, 316, & 440. 1959.

Much-branched xerophilous shrub; stems and branches tough, white, longitudinally many-ridged, glabrous or glabrescent, covered with corky bark; twigs numerous, short, stiff, divaricate,

spine-tipped, densely puberulent; principal internodes much abbreviated, the twigs usually 5--15 mm. apart, but the leaves borne more or less irregularly on the branches between the twigs, the leaves on the twigs mostly adjacent or practically so; leaves mostly opposite, but sometimes alternate or scattered, much reduced and scale-like, fleshy, sessile and closely adnate to the twigs, branchlets, branches, and even scattered on the main stems, 1--2 mm. long, mostly 3-lobed, the central lobe about twice as long as the two lateral lobes, with much thickened and more or less revolute margins, deeply 3-canaliculate beneath, the margins glabrous, but the thin line of leaf-blade visible within the channels mostly minutely puberulent, no expanded non-appressed leaves produced even during and after anthesis; spikes terminal, much abbreviated, dense and congested, less than 1 cm. long and wide, few-flowered; bractlets rather large, imbricate, broadly elliptic, 3--3.5 mm. long, 1.5--2 mm. wide, somewhat navicular, short-acuminate at the apex, carinate on the back, densely white-villous on the back, subequalling the calyx; calyx tubular, about 3.5 mm. long, not winged, densely villous; rachis densely villosulous.

The type of this very remarkable and distinct species was collected by Georg Hans Emmo Wolfgang Hieronymus and Gustavo Niederlein at Vinchina, La Rioja, Argentina, on March 5, 1879, and is deposited in the herbarium of the Botanisches Museum at Berlin. The type collection, as well as Hieronymus & Niederlein 547 and T. Meyer 4045, were erroneously cited by me in Lilloa 8: 412 (1942) and 10: 365 (1944) as A. deserticola (R. A. Phil.) Moldenke. Hieronymus & Niederlein 547 is at least a topotype collection of A. riojana, as is also the February 19, 1879, unnumbered collection.

The species has been found at an altitude of 1350 meters, blooming in January and February, and a popular name is "ricarica" (a name apparently generic in application). Meyer reports that the species is medicinal, being employed locally as a stomachic and to induce abortion. Some herbarium specimens have been misidentified and distributed as A. hastulata Griseb.

In all, 8 herbarium specimens and 2 mounted photographs, including the types or phototypes of all the names involved, have been examined.

Citations: ARGENTINA: La Rioja: Hieronymus & Niederlein 547 (N, Vt, W, W--617536), s.n. [Vinchina, 19.II.1879; Herb. Osten 13003] (Ug), s.n. [Vinchina, 5.III.1879; Macbride photos 17536] (Br--isotype, Kr--photo of type, N--photo of type); T. Meyer 4045 (N, N).

ACANTHOLIPPIA SERIPHIOIDES (A. Gray) Moldenke, Lilloa 5: 370--371. 1940.

Synonymy: Lippia seriphioides A. Gray, Proc. Am. Acad. 6: 49-50. 1862. Verbena rubiginosa Hook. ex A. Gray, Proc. Am. Acad. 6: 50, in syn. 1862. Lippia foliolosa R. A. Phil., Anal. Univ.

Chile 36 [—37]: 192—193 [Sert. Mendoc. Alt. 34]. 1870. Verbena rubiginosa Gill. ex Ball, Journ. Linn. Soc. Lond. Bot. 21: 230, in syn. 1884. Lippia foliosa Phil. ex Moldenke, Résumé 312, in syn. 1959. Lippia rubiginosa Gill. ex Moldenke, Résumé 316, in syn. 1959 [not L. rubiginosa Schau., 1847].

Literature: A. Gray, Proc. Am. Acad. 6: 49—50. 1862; R. A. Phil., Anal. Univ. Chile 36: 192—193 [Sert. Mendoc. Alt. 34]. 1870; Ball, Journ. Linn. Soc. Lond. Bot. 21: 230. 1884; Lorentz & Niederlein, Exped. Río Negro 266. 1889; Dusén, Patagonien 252. 1900; Briq., Ann. Conserv. & Jard. Bot. Genève. 4: 21. 1900; Macloskie in W. B. Scott, Rep. Princeton Univ. Exped. Patagonia 8 (2): 691—692. 1905; Hauman-Merck, Anal. Mus. Nac. Nat. Hist. Buenos Aires 24: 415. 1913; Sanzin, Anal. Soc. Cient. Argent. 88: 101. 1919; Houard, Zocéd. Pl. Amer. Sud 349—350. 1933; Moldenke, Prelim. Alph. List Invalid Names 30 & 48. 1940; Moldenke, Lilloa 5: 370—372. 1940; Moldenke, Suppl. List Invalid Names 6 & 10—12. 1941; Moldenke, Alph. List Invalid Names 30, 32, & 50. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 42 & 84. 1942; Moldenke, Lilloa 8: 412 (1942) and 10: 337 & 366. 1944; Moldenke, Phytologia 2: 90. 1944; Covas & Schnack, Darwiniana 7: 86. 1945; Moldenke, Alph. List Cit. 1: 73, 82, 84, 87, 93, 95, 96, & 200. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 15. 1947; Moldenke, Alph. List Cit. 2: 440, 442, 443, 575, 626, & 627 (1948), 3: 748, 749, 813, & 896 (1949), and 4: 1017, 1095, & 1214. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 102 & 174. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 2. 1949; Moldenke, Résumé 122, 227, 312, 316, 317, 373, & 440. 1959.

Small and low, depressed or prostrate, woody shrub or bush, to 2 m. tall but usually only 20—30 cm. tall and forming twisted woody clumps, very aromatic with the odor of "cedrón", much-branched, subglabrescent throughout; stems sometimes creeping; branches yellow, 1—2 mm. in diameter; principal internodes 9—10 mm. long; leaves minute, crowded, obovate, about 6 mm. long and 3 mm. wide, 3-lobed, long-cuneate to the base, revolute along the margins, short-pilose over the whole surface beneath, bearing fascicles of additional leaves in their axils, those in the axillary fascicles somewhat smaller, the lobes short and obtuse; spikes axillary along the branches and terminal, short, subglobose, 4—6 mm. long; peduncles leafless, about 6 mm. long; bractlets ovate, green, 1-nerved, rough, the lower ones longer than the calyx, the upper ones much shorter; flowers fragrant, with the aromatic odor of thyme (Thymus serpyllum L.); calyx about 2 mm. long, white-hispid; corolla white, with a yellow throat, its tube slightly longer than the calyx.

The type of this rather common species was collected by Charles Wilkes on the United States Exploring Expedition along the Río Negro, Patagonia, Argentina, and is probably deposited in the Gray Herbarium at Harvard University. The type of Lippia foliolosa was collected by Rudolf Amandus Philippi (no. 178) at or near Mendoza, Argentina. The binomial is cited to "Chili" in error by the "Index Kewensis".

The species inhabits sand dunes, dry sandy areas, dry rocky hills, mountainsides, flat uplands, dry barrancas, pampas, dry campos, arroyos, dry sandy scrub or thornbush country, and the borders of country highways in such areas, growing from near sea-level to an altitude of 2600 meters. Hunziker describes it as abundant in the mountains in Hucal department of La Pampa. Eyerdam, Beetle, & Grondona say that it is scattered rather sparingly over a large area in Río Negro associated with two species of thorny composites along roadsides in sand and gravel in the full sunlight. In Santa Cruz they found it abundant in the disturbed light gravel of hillsides on west exposures, while in Chubut it occurs in sandy soil along roadsides. Ruiz Leal says that it is very numerous in Mendoza, where it is used in popular medicine.

It has been collected in anthesis from September to April. Vernacular names recorded for it are "orégano", "tomillo", and "tomillo macho". Hunziker reports that it is employed in the seasoning of foods. Houard, in the reference cited above, states that this species is often infested with galls caused by the insect, Misopatha lippiae Kieff. & Jørgensen. Covas & Schnack (1945) discuss the length of the pistil in relation to the size of pollen-grains. Briquet cites a Donat 43 from San Rafael, but this collection has not as yet been seen by me. The W. Fischer 12, A. Ruiz s.n., and Donat 52 collections, cited below, have been previously regarded by me as A. trifida (C. Gay) Moldenke. Herbarium specimens of A. seriphioides have been abundantly misidentified and distributed as Lippia trifida Gay, L. trifida Remy, L. hispida Gay, and Lippia sp.

A. seriphioides is, indeed, closely related to A. trifida, but its cuneiform leaves with obtuse lobes distinguish it without difficulty. In all, 110 herbarium specimens and 3 mounted photographs, including the type collections or phototypes of all the names involved, have been examined.

Citations: ARGENTINA: Buenos Aires: Cabrera 6650 (N); Parodi 13846 (N). Chubut: Cabrera 31 (N, N); Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 6183] (N); Eyerdam, Beetle, & Grondona 23809 (Ca-623923); Koslowsky 12356 [Herb. Osten 19356] (Ug); O'Donell 3239 (S), 3391 (N, S), s.n. [Astra, Nov. 10, 1945] (N); Ruiz Leal 14688 (Ss). La Pampa: H. H. Bartlett 19936 (Ca-775125, N); Cabrera 4383 (N); Hunziker 4170 (N); O'Donell 1775 (N). Mendoza: F. A. Barkley 19Ar807 (N), 19Ar886 (N); Barkley & Paci 229 (N); H. H. Bartlett 19193 (Ca-772213), 19430 (Ca-772462, N); Cáceres, Melis, & Paci 318 (N); Campos Porto s.n. [Herb. Jard. Bot. Río de Jan. 34478] (N); Carette s.n. [Mendoza, 1916; Herb. Mus. Argent. Cienc. Nat. 23923] (N, N, N); Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 36867] (N); Covas 15068 (N); E. M. Garcia 350 (N), s. n. [Estancia Canota, March 20, 1947] (N); Kurtz 7049 (Ja-1924, N); O'Donell 1051 (N); Osten 5128 (Ug); R. A. Philippi 178 [Herb. Mus. Nac. Chile 42416; Macbride photos 17507] (Kr-photo, N--

photo, N--photo); A. Ruiz s.n. [Herb. Mus. Argent. Cienc. Nat. 25/2212] (N); Ruiz Leal 1168 (N), 2193 (N), 2302 (N), 2899 (N), 3329 (N), 3519 (N), 3645 (N), 5022 (N), 6390 (N), 6886 (N), 6959 (N), 7681 (N), 7681/30 [Goodspeed 31030] (Bm), 7693 (N), 7693/42 [Goodspeed 31042] (Bm), 7742 (N), 7742/91 [Goodspeed 31091] (Bm), 8166 (N), 8724 (N), 8984 (N), 9630 (N), 10013 (N); Ruiz Leal & Paci 467 (N); Sanzin 628 [Herb. Osten 12804] (Ug), 963 [Herb. Osten 12803] (Ug), s.n. [Potrerillos, 15. XI.1913] (Dv--9115); A. G. Schulz 6236 (Cb); Semper 617 (N, S), s.n. [Ruiz Leal 4128] (N), s.n. [Ruiz Leal 8179] (N), s.n. [Ruiz Leal 9846] (N), s.n. [Ruiz Leal 10281] (N); Senn 4352 (N). Río Negro: Eyerdam, Beetle, & Grondona 23527 (Ca--627540); W. Fischer 12 (Cm, Io, It, N, Ur); O'Donell 1933 (S); Scala 60 (Ug), 96 (N, N, N); Scolnik 361 (Er, N); Wilkes, U. S. Explor. Exped. s.n. [Río Negro] (N--isotype, T--isotype). San Juan: Castellanos 15197 (W--2198239). San Luis: Bruch & Garette s.n. [Alto Pencoso, II.1914] (N, N); Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 25/2936] (N); Pastore 2074 (Ug--8103); A. G. Schulz 6065 (Z); Vignati 284 (N). Santa Cruz: Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 6185] (N); Donat 52 (Ca--413292, Gg--179046, Go, N, S); Dusén 5432 (S), s.n. [Puerto Angosto, 10.12.1904] (Go); Eyerdam, Beetle, & Grondona 24023 (Ca--623699); Ferruglio s.n. [Herb. Mus. Argent. Cienc. Nat. 30/1891] (N); O'Donell 3720 (N, S), 3747 (S), 3945 (N). Province undetermined: Kuntze s.n. [W. Pampas, I.92] (N), s.n. [W. Pampas, I. 94] (N); Moreno & Tonini 180 [Patagonia] (N).

ACANTHOLIPPIA TRIFIDA (C. Gay) Moldenke, Lilloa 5: 371--372. 1940.

Synonymy: Lippia trifida C. Gay, Hist. Fis. Chile Bot. 5: 29--30. 1849. Lippia gracilis R. A. Phil., Anal. Univ. Chile 90: 620. 1896. Lippia trifida Clos ex R. A. Phil., Anal. Univ. Chile 90: 622, in syn. 1896. Lippia trifida Remy ex Sanzin, Anal. Soc. Cienc. Argent. 88: 101. 1919. Aloysia gracilis (R. A. Phil.) Acevedo de Vargas, Bol. Mus. Nac. Hist. Nat. [Santiago, Chile] 25: 38. 1951.

Literature: C. Gay, Hist. Fis. Chile Bot. 5: 29--30. 1849; Phil., Fl. Atac. 40. 1860; Jacks., Ind. Kew. 2: 96. 1894; R. A. Phil., Anal. Univ. Chile 90: 620. 1896; Hauman, Río Negro 415. 1913; Sanzin, Anal. Soc. Cienc. Argent. 88: 101. 1919; Molfino, Physis 9: 21. 1921; Moldenke, Lilloa 5: 371--372. 1940; Moldenke, Suppl. List Invalid Names 5 & 6. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 42, & 84. 1942; Moldenke, Lilloa 8: 412. 1942; Moldenke, Alph. List Invalid Names 30 & 32. 1942; Moldenke, Lilloa 10: 337. 1944; Moldenke, Alph. List Cit. 1: 163, 202, & 230. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 14. 1947; Moldenke, Alph. List Cit. 2: 440 & 629 (1948), 3: 693, 775, & 880 (1949), and 4: 1178, 1249, & 1251. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 100 & 174. 1949; Acevedo de

Vargas, Bol. Mus. Nac. Hist. Nat. [Santiago, Chile] 25: 38. 1951; Biol. Abstr. 28: 904. 1954; Moldenke, Résumé 120, 233, 312, 313, 317, & 440. 1959.

Subshrub, to 31 cm. tall, intricately branched, yellowish, strongly and agreeably odorous, puberulent-tomentose or pulverulent to glabrous; branches short, slender, twisted, eventually leafless, the lower ones about 1.5 mm. in diameter, divided into very many stiff branchlets which are very slender, short, and subtetragonal or subcylindric; leaves opposite, deciduous, crowded, minute, sessile, trifid or 3-parted (occasionally entire), to 6 mm. long, smaller (2--4 mm. long) toward the tips of the twigs, numerous on the young shoots, but very soon caducous, about 2 mm. wide, the lobes narrow-linear, obtuse, the central one longest, the sinuses usually extending to the middle of the leaf or occasionally to the base; spikes short, 8--24 mm. long, terminal on the branches, slender, 4- or 5-flowered; flowers minute, sessile in the axils of linear-acute bractlets; calyx campanulate, about 2 mm. long, densely white-pilose or hispid-lanate, the rim 4-toothed, the teeth linear-acute; corolla slightly exserted from the calyx, about 3.5 mm. long, reddish, its limb 4-parted, the lobes rounded; stamens didynamous, the upper ones terminating in a small capitate appendage which is a prolongation of the connective; anthers exserted; fruiting-calyx persistent, including the fruit; fruit composed of 2 nutlets.

The type of this rare species was collected by Claude Gay in the neighborhood of Copiapo, on the Atacama Desert of Chile, between 1834 and 1842. The type of Lippia gracilis was collected by Gustavo Flühmann at Salto de San Andreas, also in the Atacama Desert of Chile.

W. Fischer 12, Donat 52, and A. Ruiz s.n. [Herb. Mus. Argent. Cienc. Nat. 25/2212], as well as F. Kurtz 7049 -- all from Argentina -- were previously regarded by me as this species, but have proved to be A. seriphioides (A. Gray) Moldenke instead. A. trifida is apparently limited to the Atacama Desert of Chile.

The Anal. Univ. Chile 90: 620 reference given above is often cited as "1895". Gay says of this species: "Arbusto que se cria en la provincia de Copiapo y que podria ser de alguna utilidad por su mucha fragancia, lo mismo que las Lippia chilensis y citriodora, con las cuales forma un grupo perfectamente caracterizado por su traza y la forma de la flor y sobretodo del cáliz." Actually, "Lippia chilensis" [= Aloysia salviaefolia (Hook. & Arn.) Moldenke] does have its calyx long-hirsute as in Acantholippia, but "L. citriodora" [= A. triphylla (L'Hér.) Britton] does not! Sanzin, in the reference cited above, unites Lippia foliolosa A. Gray and L. floribunda R. A. Phil. with this species, as well as L. seriphioides A. Gray, but the first and third of these I regard as A. seriphioides (A. Gray) Moldenke and the second as Aloysia reichii Moldenke.

In all, only one herbarium specimen and 4 mounted photographs have been examined, but these include phototypes of all the

names involved.

Citations: CHILE: Atacama: Boel s.n. [Vallée du Río San Alberto, November 1924] (Br); Flühmann s.n. [Salto de S. Andreas; Herb. Mus. Nac. Chile 42419] (N--photo); C. Gay s.n. [Macbride photos 24673] (Kr--photo of isotype, N--photo of isotype, Sg--photo of isotype).

ADDITIONAL NOTES ON THE GENUS AMASONIA. V

Harold N. Moldenke

AMASONIA L. f.

Additional & corrected literature: Pers., Syn. Pl. 2: 141. 1807; Walp., Repert. Bot. Syst. 4: 124--125. 1845; Bocq., Adansonia 2: 87, 129, 130, 134, 144, 149, 155, 156, & 163, pl. 5, fig. 11--18 (1861) and 2: 180, 183, & 217--219. 1862; Bocq., Rev. Groupe Verbenac. 7, 49, 50, 54, 64, 69, 75, 76, & 87, pl. 5, fig. 11--18. 1862; Moldenke, Syst. Bot. Lect. 7, rev., 1. 1938; Moldenke, Brief Course Syst. Bot., ed. 2, 36. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 30, 32, 33, 36, 40, 71, & 86. 1942; Moldenke, Alph. List Cit. 1: 3, 6, 8, 11, 12, 15, 31, 37, 40, 44, 49, 55, 60, 64, 67, 68, 70, 79, 82, 92, 107, 112, 113, 116, 117, 121, 130--132, 135, 141, 142, 161, 165, 167, 168, 179, 194, 196, 198, 200, 205, 211, 212, 215, 217, 222--224, 237, 238, 248, 261, 264, 276, 286, 311, 317, 318, 322, & 323 (1946) and 2: 327, 330--334, 337, 341, 344, 346, 347, 350, 352, 361, 364, 365, 403, 409, 413, 422, 432, 435--437, 439, 444, 447, 448, 486, 487, 502, 528, 534, 544, 550, 553, 554, 556, 557, 565--567, 573, 577, 582, 603--605, 607, 608, 612, 624, 626, 630, 633, & 640. 1948; Moldenke, Notice Phyt. Subscr. [2]. 1948; Moldenke, Alph. List Cit. 3: 655, 666, 669, 670, 675, 684, 686, 687, 692, 694, 699, 701, 704, 708--712, 724, 726, 731, 739, 747, 749, 771, 773, 782, 810, 816, 824, 825, 832, 833, 846, 853, 855, 887--890, 892, 898, 905, 906, 935, 945, 951, 954--957, 969, & 975 (1949) and 4: 984--986, 993, 996, 1004--1009, 1014, 1015, 1020, 1035, 1043, 1044, 1046, 1050, 1052, 1056, 1064, 1066, 1067, 1069--1071, 1078, 1079, 1093, 1097, 1098, 1106, 1113, 1115, 1132, 1146, 1147, & 1231. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 57, 59, 62, 65, 67, 68, 75, 156, & 176. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 3. 1949; Moldenke, Phytologia 4: 452--456. 1953; Moldenke in Cheesman, Fl. Trin. & Tob. 2 (6): 383 & 398--399. 1955; Moldenke, Fam. 2 Verbenac. [2] & 17--18. 1955; Moldenke, Résumé 62, 65, 70, 74, 76, 78, 82, 87, 115, 213, 234, 278, 298, 352, 353, 407, 423, & 442. 1959; Rickett & Stafleu, Taxon 9: 84. 1960; Moldenke, Résumé Suppl. 2: 8. 1960.

Full explanation of the abbreviations for herbaria employed in this and all previous notes on this genus will be found in Phytologia 5: 154--159 (1955), 6: 242 (1958), 7: 91--92 (1959),